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ent volumes suggest a higher nervous tension in composition. He has evidently welcomed the opportunity to free his mind on a number of subjects in which his emotions are somewhat concerned. The criticisms are often sharp to the point of the caustic and more personally toned than heretofore. This tendency, suggestive of the fruits of long contact with German usages and particularly with Professor G. E. Müller, that acrimonious guardian of the psychological fold, the reviewer regards with chastened enthusiasm. To be sure the technical tedium of the text is considerably relieved by these excursus, but the books were not written primarily for entertainment. For the most part, be it said, the criticism is perfectly objective, as scientific criticism seemingly should be. Moreover, the author sins as little in this way as any psychologist known to the writer.

In conclusion the reviewer is moved to express a measure of dissent from Professor Titchener's estimate of the importance of the spread of interest and proficiency in quantitative psychology. The difference is perhaps largely one of degree of emphasis. To the writer it does not seem probable that the extended development of quantitative investigations is an immediate *sine qua non* of further progress in psychology. So far as these methods invite and stimulate exactness and accuracy and appreciation of scholarly modes of work, so far will a wide-spread familiarity with them in psychological circles be rewarded by an increase in the amount and scientific character of the output of our investigators. The reviewer has always felt the most unreserved confidence in the improvement which would accrue to the qualitative studies from a more thorough acquaintance with the quantitative procedures. As every experimentalist knows, there is hardly a problem in qualitative psychology in which some trace of the quantitative element is not to be found, and in practically all experiments, a regard for the canons of such procedure is indispensable to trustworthy results. For their general tonic effects, therefore, as well as for their practical utility in qualitative research, the reviewer looks with great hopefulness upon the development of interest in quantitative methods and problems. Nor would the reviewer be understood as depreciating the value of quantitative work on its own merits and for its intrinsic worth. Quite the contrary. But as the writer understands him, Professor Titchener would take a more extreme and positive attitude, with the conviction that we have gone about as far as we safely can without assistance from the quantitative side. The reviewer feels that there is yet much useful pioneer work to be done before the nicety of the quantitative methods can be summoned to trim up the edges. All this is matter of opinion pure and simple and time alone will determine the more correct estimate. For better or for worse there can be no question that these volumes will instigate a large amount of intelligent interest where before there was nothing but ignorance and hearsay. And no doubt, too, out of this new-born interest will blossom much research of a high order. For all this and for much more Professor Titchener will have our gratitude and appreciation.

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L'Attention, by W. B. PILLSBURY. Bibliothèque internationale de psychologie expérimentale. Octave Doin, Paris, 1906. pp. 299.

Professor Pillsbury and his pupils at the University of Michigan, have for some time been devoting experimental study to the so-called fluctuations of attention. The present book, however, refers only in passing to this work; it is a general treatise undertaking to summarize the facts about attention and to include them under a theory. The facts are grouped in the first eight chapters, entitled 'The

Psychic Effects of Attention; 'The Motor Phenomena Accompanying Attention,' 'The Conditions of Attention;' 'Interest and the Feeling of Activity;' 'The Effects of Attention on Consciousness;' 'Attention and Ideas;' 'Attention and Association in Perception;' 'Attention in Memory.' The essence of attention as a mental phenomenon is declared to be increased clearness, and increased intensity is held under certain conditions also to occur. The motor phenomena of attention often follow attention proper, hence do not constitute it. To explain the fluctuations of attention, fatigue of the cortical cells, both those involved in the sensations attended to and those corresponding to associated ideas (the Lange memory-image theory) is invoked, but the length of the attention wave is supposed to be determined by vaso-motor and respiratory rhythms. The latter by themselves would not explain cases of rivalry, where processes in two sets of cortical centres are alternately dominant. The former alone would not explain the rhythmic regularity of the changes. Dr. Pillsbury's idea, as explained on p. 101, apparently is that in rivalry, at the moment of the general depression produced by the trough of a vaso-motor wave the unfatigued set of cells has an advantage over the fatigued set and a chance to assume dominance.

Under the head of 'Conditions of Attention,' the writer emphasizes the distinction between objective and subjective conditions. The former comprise the intensity, extent and duration of the stimulus; the latter, the contents of consciousness at the moment of attention, and farther back, the education, social surroundings and heredity of the individual. The distinction is not clearly drawn, however; for instance, movement is placed in the subjective class because its efficiency in directing attention depends on the biological conditions of mental development, while change in the intensity of a stimulus is referred to the objective class. Surely both are subjective if dependence on evolutionary conditions is the test of subjectivity, and both objective if that term designates characteristics belonging to the stimulus itself. One of the conclusions of the chapter on 'Attention and Ideas,' is that "every centrally excited process . . . is the result of two series of conditions, objective-associational and subjective-attentional." Thus the suggestion is clearly made that the essential conditions of attention are the subjective ones. We shall return to this point later.

Professor Pillsbury's discussion of theories of attention is clear and valuable. He divides them into three groups: those which relate attention to apperception, those which like the motor theory of Ribot elevate some accompanying phenomenon to the rank of an essential feature, and those which are purely physiological in their character. In discussing Wundt's apperception theory, the author makes the statement that Münsterberg has in the last ten years completely changed his position: while he formerly objected to explaining anything in consciousness by an unknown element outside of consciousness, "he now maintains that all consciousness is simply the manifestation of an unknown will." This position Dr. Pillsbury declares to be the counterpart of Wundt's apperception doctrine (p. 182). Münsterberg is clearly misrepresented here; he does not use his 'unknown will' to explain anything in consciousness. It remains forever removed from the world of science where explanations hold sway, and the only possibility of explaining conscious processes lies for him on the physiological side. It is perhaps connected with this misapprehension that Münsterberg's central physiological theory is nowhere mentioned in the book.

The chapter on 'The Physiology of Attention' contains the ablest

and most original part of Dr. Pillsbury's work. In the preceding chapter he accepts the evidence put forth in behalf of the frontal lobes as the anatomical substrate of attention. He now points out that various experimental data, for instance, the results of Bowditch, Lombard and Warren on the knee-jerk, indicate that one nerve centre may affect another by way of inhibition and reinforcement. The work of Bruce on retinal rivalry and that of Taylor on the fluctuations of the Masson gray ring as affected by additional stimuli, may be interpreted as showing that such inhibition and reinforcement operate in the field of attention. The experiments of Lange on the effect of associated ideas in holding before the attention one interpretation of an ambiguous figure such as the outline cube, indicate that the centres chiefly active in such reinforcement and inhibition are those especially associated with the centres affected. Dr. Pillsbury prefers to allow the possibility of both reinforcement and inhibition, rather than to depend solely upon inhibition, after the Wundtian fashion, because he thinks there is evidence for positive effects of attention, such as increase in the intensity of a sensation. Attention, then, is explained physiologically as the result of the reinforcing action of certain cortical cells upon other associated cortical cells, plus a probable inhibitory effect of the former upon the rest of the cortex. What distinguishes it from association? This primarily: that it is an effect of one group of cells upon another, produced through the medium of the frontal lobes, while association may take place, as Flechsig supposes, directly between the various sensory regions of the cortex. The objective factors in association depend probably upon such direct connection; the subjective factors, involving the individual's whole past and heredity, must depend upon an organization of the entire cortex through the frontal lobes. There are three principal differences between that action of one group of cells upon another which is involved in attention and that which is involved in association. First, in the former case, such action is not the sole or principal factor exciting the affected group, as it is in the latter case; second, in attention the process in the cells which exercise the modifying influence need not be accompanied by consciousness, while it ordinarily is so accompanied in association; third, the effect in attention is produced by a general participation of the whole cortex, while in association only a localized group of cells is active.

Space forbids a discussion of the interesting applications which Professor Pillsbury makes of his theory to pathological phenomena. It is perhaps most valuable in its definition of the relations between attention and association. The working out of the psychological aspect of the author's theory in the earlier chapters seems, however, less clearly conceived than that of its physiological basis. If objective relations between conscious processes depend physiologically upon mere associative connections between sensory centres, while only the subjective factors involve the reaction of the whole cortex through the frontal lobes, why should we have objective and subjective conditions of attention distinguished, and imperfectly distinguished at that, as we have seen in the earlier chapters? As a matter of fact there are no purely objective conditions of attention. Mere intensity, for example, does not condition attention. When I ride in a trolley through a crowded city street, my eyes are dazzled and my ears deafened by intense stimuli which may pass almost wholly unnoticed as I occupy myself with a train of thought. Sudden increase in intensity does attract attention, because it appeals to an instinct based far back in the part of the species, and is therefore classed among the subjective conditions of attention. We attend to nothing save through

the reaction of the whole cortex, hence we attend to nothing for really objective reasons.

A word or two is necessary in regard to the translation. It is unfortunate that we should not have had this scholarly and suggestive book in its native English, for the French version is not always clear and is occasionally incorrect. To mention only two examples of the latter fact, when Dr. Pillsbury speaks of 'the mood of the moment' as among the subjective conditions of attention, 'le mode du moment' is meaningless as a translation. When he refers to "Stout's 'tendency towards an end,'" meaning the principle thus designated by Stout, there is an ominous suggestion in the translators' 'la tendance de Stout vers une fin'!

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PSYCHIATRICAL LITERATURE.

By ISADOR H. CORIAT, M. D.

Les Écrits et Les Dessins dans les Maladies Nerveuses et Mentales
par J. ROQUES DE FURSAC. Masson et Cie., Paris, 1905. pp. 306.

The value of speech and writing as a diagnostic adjunct to the study of neurology and psychiatry, has been emphasized during the last year by the monographs of Köster and Liebmann, the former relating to graphological disorders without any effort at discussion, the latter to stenographic samples of special disturbances of language. Roques de Fursac, however, has given us a comprehensive and readable treatise on this important subject, although he enters into dogmatic and, at times, tedious discussions. According to him the clinical description of the disorders of writing comprises two points: first, in the material execution of the writing, in its totality, direction and form of lines and the form and dimensions of the letters; secondly, the content of the writing, or the ideas expressed or reproduced by the writer. The study of the first is called caligraphy, of the second psychography. All psychic symptoms, excitements, depression, intellectual enfeeblement, modify the characteristics of the handwriting. The elementary caligraphic disorders relate to the direction and form of the lines, and the direction, dimensions and form of the letters. There is postulated the existence of a special graphomotor centre in the second left frontal convolution, disturbances in this centre giving rise to agraphia and paragaphia. Other symptoms that may arise in various nervous and mental disorders are omission, impossibility of copying, false syntax, substitutions, transpositions, additions, graphic incoherence, echo-graphia, and graphic stereotypy and impulsions. The illustrations are excellent and include samples of writing in paralysis agitans, exophthalmic goitre, chorea, tabes, multiple sclerosis, writer's cramp, the various stages of epilepsy and general paralysis, organic dementia, dementia præcox, acute and chronic alcoholism, various confusional and delirious states, manic-depressive insanity, melancholia, neurasthenia, hysteria, idiocy, imbecility and paranoic states. Especially well shown is the tremor of delirium tremens. One important symptom of katatonia, namely the capitalization of the first letter of each word, seems to have been unobserved by the author. The drawings are very elaborate productions and mostly of the mystic, paranoic type.